

Supporting information

Efficient and Irreversible capture of radioactive strontium ions from nuclear wastewater using metal-organic Frameworks with ion trap group.

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Figure caption

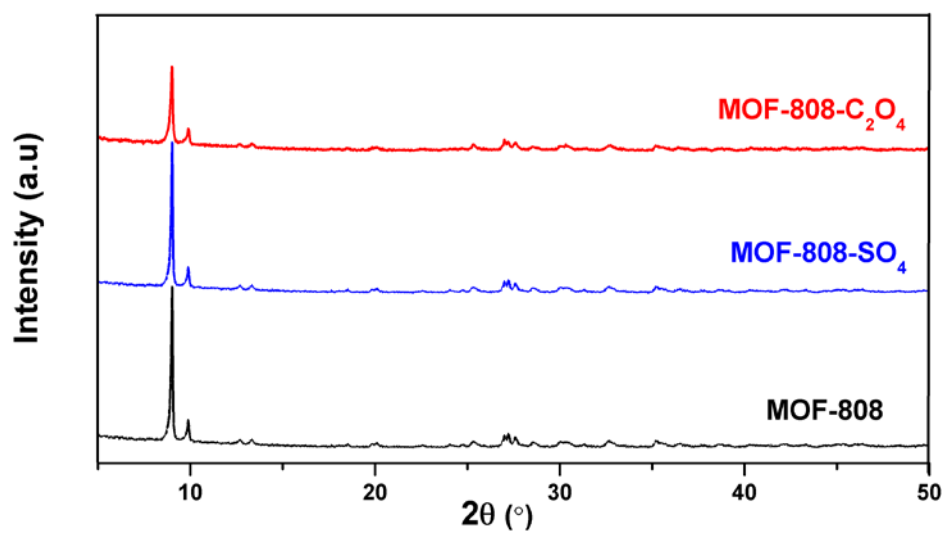


Fig.S1 XRD patterns of MOF-808, MOF-808-SO₄ and MOF-808-C₂O₄ samples
after soaking in acidic solution for 24h

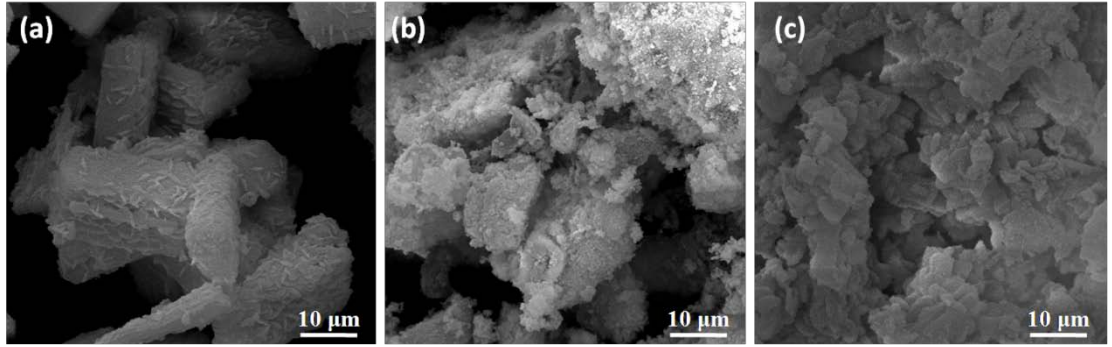


Fig.S2 SEM images of MOF-808, MOF-808-SO₄ and MOF-808-C₂O₄ samples
after soaking in acidic solution for 24h

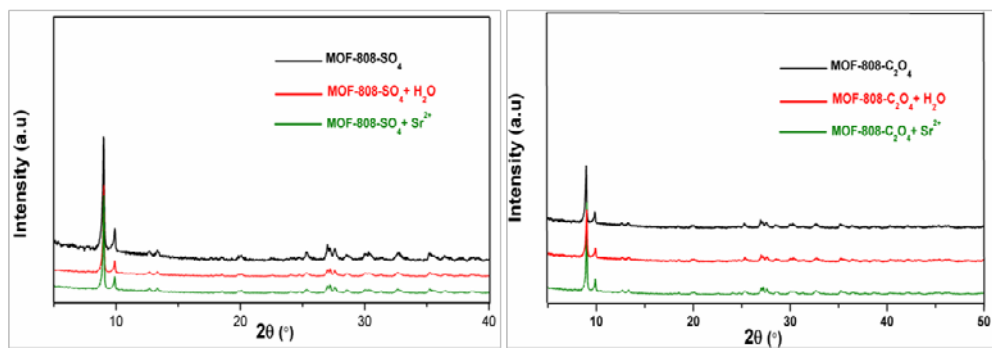


Fig.S3 XRD patterns of MOF-808-SO₄ and MOF-808-C₂O₄ after immersing in water / strontium solution.

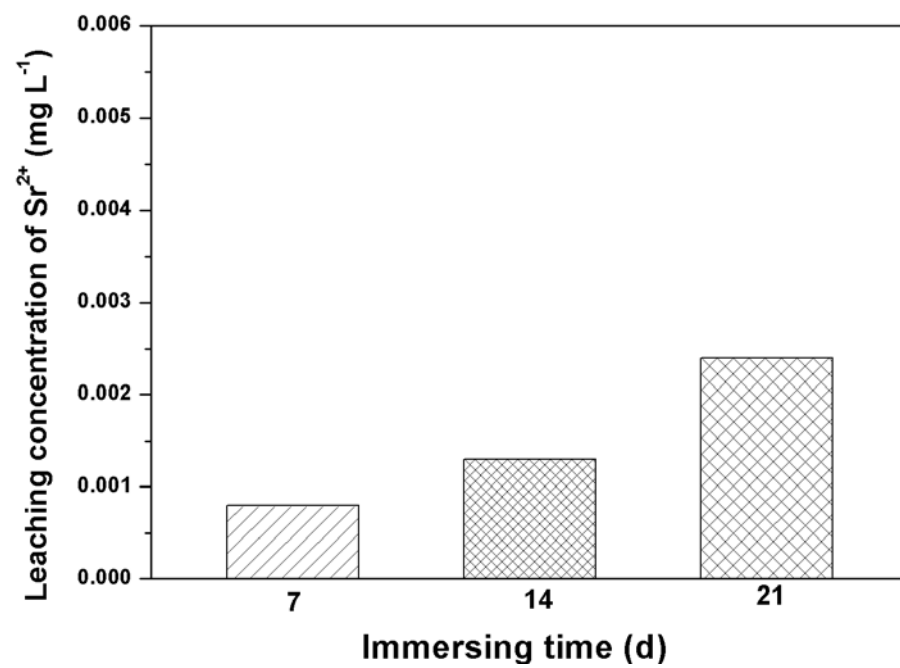


Fig.S4 Sr²⁺ ions concentration of solution after immersing of MOF-808

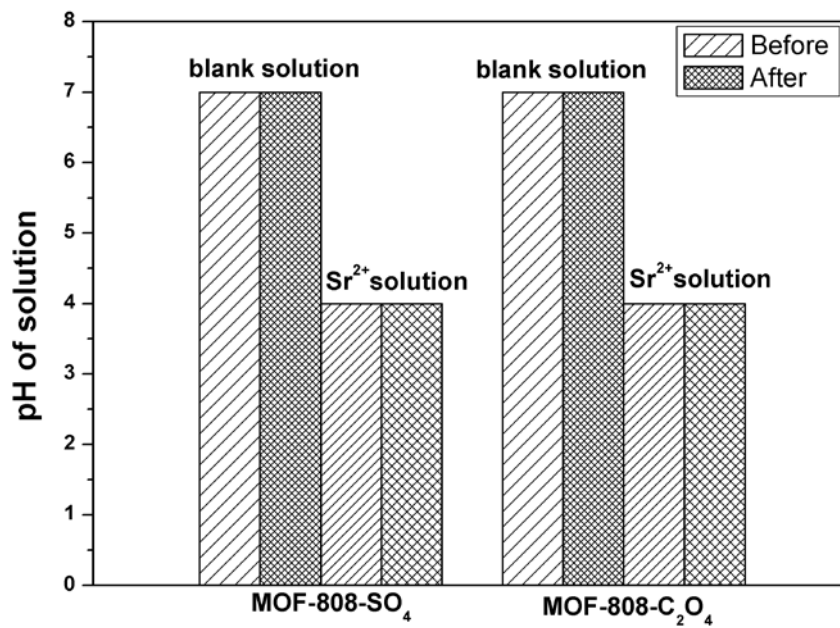


Fig.S5 Solution pH values before and after immersing

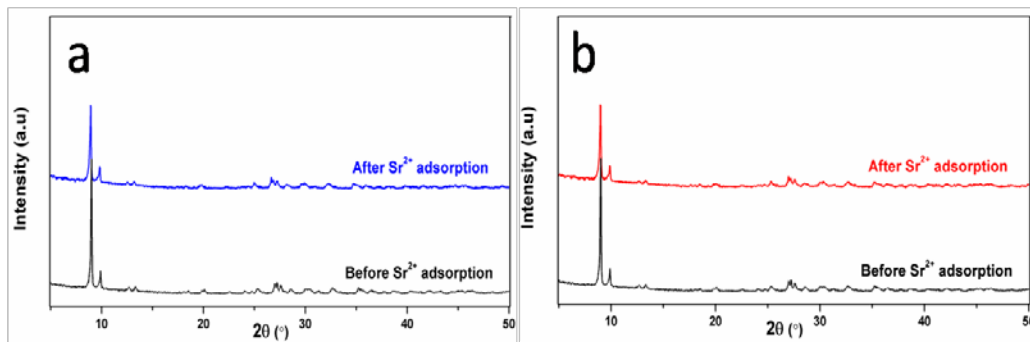


Fig.S6 XRD patterns of (a) MOF-808-SO₄ and (b) MOF-808-C₂O₄ before and after adsorption of Sr²⁺ ions

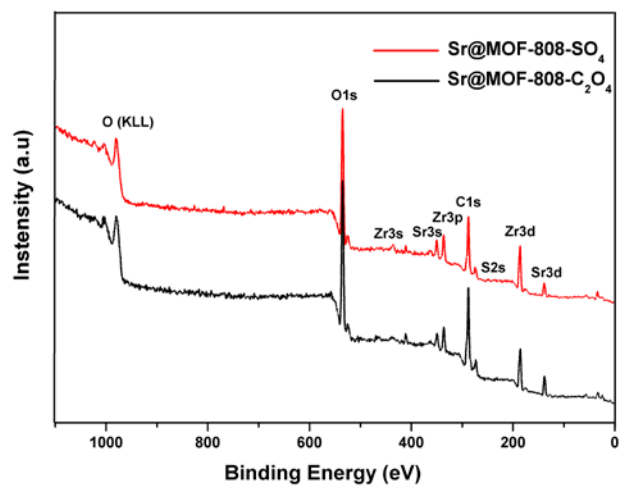


Fig.S7 XPS spectrum of MOF-808-SO₄ and (b) MOF-808-C₂O₄ after adsorption of Sr²⁺ ions

Table caption

Table.S1 Equilibrium isotherm model parameters for Sr²⁺ adsorption on MOFs samples

Adsorbent	Langmuir isotherm			Freundlich isotherm		
	q _m (mg g ⁻¹)	b (L mg ⁻¹)	R ²	n	k _f [mg g ⁻¹ (L/ g) ^{1/n}]	R ²
MOF-808	72.65	0.0183	0.9982	1.782	2.664	0.9321
MOF-808-SO ₄	174.62	0.0651	0.9987	2.217	5.824	0.9624
MOF-808-C ₂ O ₄	206.34	0.1225	0.9996	1.632	3.238	0.9718

Table.S2 kinetic parameters for Sr²⁺ sorption onto MOF-808 materials (T=298 K)

Model	Parameters	MOF	MOF-808-SO ₄	MOF-808-C ₂ O ₄
Experiment	q_e (mg g ⁻¹)	72.48	174.46	204.48
Pseudo first-order kinetic	k_1 (min ⁻¹)	0.0123	0.0236	0.0458
model	q_e^{cal} (mg g ⁻¹)	71.62	174.42	203.2
	R ²	0.8763	0.9236	0.9346
Pseudo second-order kinetic	k_2 (g mg ⁻¹ min ⁻¹)	0.0018	0.0056	0.0055
model	q_e^{cal} (mg g ⁻¹)	72.48	174.53	204.32
	R ²	0.9937	0.9946	0.9978